

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Song, et al.	Art Unit: 1615
Serial No: 10/747,668	Examiner: Ahmed, Hasan Syed
Filing Date: December 29, 2003	
Title: <i>Natural Pearlescent Odor Reduction</i>	Atty. Docket No.: 5017

**APPEAL BRIEF**

Commissioner of Patents  
and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal from the Final Rejection of claims 1-20, dated  
January 11, 2008.

**REAL PARTY IN INTEREST**

The real party in interest of this application is BASF Catalyst, L.L.C.

**RELATED APPEALS AND INTERFERENCES**

U.S. Serial No. 10/908,503, filed May 14, 2005 is related to the  
technology of the present application and has been assigned Appeal No.  
2008-2392.

### STATUS OF THE CLAIMS

Claims 1-20 have been Finally rejected and are being appealed.

### STATUS OF AMENDMENTS

No amendment under Rule 116 has been filed.

### SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention is directed to deodorizing a natural pigment obtained from fish scales. As stated in the application at page 5, lines 2-9, the initial steps of the process of separating natural pearlescent pigment from fish and forming the pearlescent paste are known in the art and do not form part of the novelty of the invention. As disclosed at page 5, lines 10-15, the first step of the process involves separating the native guanine crystals from the fish scales, water washing and then extracting the crystals. In the Background of the Invention at page 1, line 18 through page 2, line 1, it is initially stated that it is known to recover pearlescent crystals from fish scales. As stated at page 2, lines 17-23, it has been found that the natural crystallized guanine from the fish scales can contain impurities which result in an unpleasant odor in the products formulated therewith. The unpleasant odor often persists even after several bleaching and washing steps.

In the presently claimed invention and as set forth in independent claim 1, the deodorization of the pigment derived from fish scales is achieved by contacting the pigment with a complex metal hydride. This is described initially at page 8, lines 1-3. Claim 2 recites that the pigment comprises guanine which is disclosed at previously mentioned page 5, lines 10-19. The formation of an aqueous pigment paste, claim 3, is described at page 5, line 17 through page 8, line 3. The complex metal hydride preferably used to treat the pigment derived from fish scales is sodium borohydride as set forth in claims 4 and 6 and as described at page 8, lines 3-5. The sodium borohydride is preferably added to the pigment paste as a solid powder and in amounts ranging from 0.5 to 10 wt.%, and preferably in an amount of 1 wt.% relative to the pigment paste, as set forth in claims 9, 10, and 11. Support for each of

these limitations is set forth at page 8, lines 12-18. To help with the treating procedure and to cause foaming and off gassing of the mixture of the complex metal hydride and the pigment paste, a weak acid, claim 5, such as an organic acid, claim 7, and, in particular, acetic acid, claim 8 is added to the mixture. This is specifically described at page 9, lines 5-24 of the specification, as well as page 10, lines 15-21. The weak acid is added in amounts of 0.5 to 10 wt.% of the pigment paste, and preferably in an amount of 1 wt.% of the pigment paste as set forth in claims 12 and 13 and disclosed at page 9, lines 5-9 of the specification. It is also important that the weak acid be added to the mixture of pigment paste and sodium borohydride no more than 3 hours after the mixture is formed, claim 14 and as disclosed at page 9, lines 17-21. The deodorized pigment paste is useful in cosmetic formulations as set forth in claims 18-20, and as set forth at page 12, lines 11-19.

#### GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 2 and 4 have been Finally rejected under 35 U.S.C. 102(b) as being anticipated by JP 51149211A ("Saiga"). Saiga is applied as disclosing a method of improving odor from natural sources comprising the use of a borohydride. The Examiner states that the Saiga reference discloses amines as the source of the odor. The Examiner states that although Saiga does not disclose the fish scales of claim 1 or the guanine of claim 2, the Examiner concludes that amines are inherently the source of odor in guanines and fish scales.

Claims 1-8, 10 and 14-17 have been Finally rejected under 35 U.S.C. 103(a) as being unpatentable over Saiga in view of JP2003088337A ("Hiroshi"). Saiga is applied as teaching a method of improving odor from natural sources. Saiga is admitted as different from the instant application in that it does not teach the weak acid of claims 5, 7, 8, and 14-17. The Examiner states, however, that the use of weak organic acids to reduce the odor of fish scale products was known in the art before the instant application was filed, as taught by Hiroshi (paragraph 0011). The Examiner admits that although Hiroshi does not teach the acetic acid of claims 8 and 17, citric acid

and phosphoric acid as set forth in paragraph 0011 of Hiroshi are deemed to be functional equivalents of acetic acid.

The primary reference to Saiga is also admitted as differing from the instant application in that it does not teach the fish scale derived paste of instant claims 3, 14 and 15. Hiroshi is applied as forming a fish scale derived paste by mixing acidic water with ground fish scales, paragraphs 0015 and 0016. Hiroshi is further applied as teaching that adding weak organic acids to fish scale derived products sharply reduces the smell of fish scales, paragraph 0048. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to disclose a method of reducing the odor of fish scale derived products using complex metal hydride and weak acid as taught by Saiga in view of Hiroshi.

Claims 1, 9 and 11-13 have been Finally rejected under 35 USC 103 as being unpatentable over JP 51149211A (Saiga) in view of JP 2003088337A (Hiroshi). The Examiner states that Saiga teaches a method of improving odor from natural sources and Hiroshi teaches a method of reducing the odor of fish scale derived products using weak organic acids. The Examiner admits that the prior art does not explicitly teach all the instant claimed percentages, but concludes it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine suitable percentages through routine or manipulative experimentation to obtain the best possible results, as these are variable parameters attainable within the art. The Examiner also states that, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. The Examiner states that the Applicants have not demonstrated any unexpected or unusual results which accrue from the instant percentage ranges.

Claims 1 and 18-20 have been Finally rejected under 35 USC 103(a) as being unpatentable over Saiga in view of Hiroshi and further in view of U.S. Patent No. 4,486,334 (Horiuchi). The Examiner states that Saiga teaches a

method of improving odor from natural sources and Hiroshi teaches a method of reducing the odor of fish scale derived products using weak organic acids. The Examiner states that Saiga and Hiroshi differ from the claimed invention in that the references do not teach a cosmetic formulation. The Examiner states, however, that fish scale derived cosmetic formulations were known in the art before the instant application was filed as explained by Horiuchi, column 1, lines 11-31. The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time the invention was made to disclose a cosmetic formulation derived from fish scales as taught by Horiuchi.

### ARGUMENT

Claims 1, 2, and 4 have been rejected under 35 U.S.C. 102(b) as being anticipated by JP 51149211A ("Saiga").

To reject a claim on the basis of anticipation over a reference, the reference must teach each and every limitation of the claimed invention. The claimed invention as recited in claim 1 is directed to contacting a pigment, which has been derived from fish scales with a complex metal hydride. Saiga does not teach a process of treating a pigment derived from fish scales with a complex metal hydride. Saiga is directed to treating a long-chain aliphatic amine derived from a natural fat or oil with a complex metal hydride such as the claimed sodium borohydride. Since the applied reference does not teach the claimed limitation of deodorizing a "pigment derived from fish scales", the applied reference cannot be used to properly reject claims 1, 2, and 4 by anticipation under 35 U.S.C. 102(b).

The Examiner argues that the Saiga reference reads on instant claims 1, 2, and 4 as they are currently drafted, and states that the recitation of "fish scales" has not been given patentable weight because the recitation occurs in the preamble. The Examiner states that a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claims does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. Appellants have no argument

with the Examiner's discussion of when a preamble is not accorded any patentable weight. However, the instances in which the Examiner states that the preamble is not given any patentable weight are not present in the appealed claims. In appealed claim 1, a "pigment derived from fish scales" is the object that is being treated. The claim does not set forth an intended use, does not set forth a purpose of a process, and the body of the claim certainly depends upon the preamble for completeness inasmuch as the process is directed to treating "said pigment", which has antecedent basis in the preamble which recites "deodorization of pigment derived from fish scales" with a complex metal hydride. The Examiner simply cannot ignore the preamble in this instance when the process claims herein are directed specifically to acting on the subject of the preamble, i.e. pigment derived from fish scales. The claimed invention is not directed to contacting any object with a complex metal hydride. The treatment of long chain aliphatic amines derived from a natural fat or oil, as discussed in the applied reference, does not anticipate the claimed process.

The Examiner also argues that the present invention is directed to removing unpleasant odor in the fish scales and that the amines are the source of the unpleasant odor. In fact, the present application at page 2, lines 17-20 states that the naturalized crystalline guanine, which is obtained from the fish scales, may contain impurities, believed to be amines which can cause deterioration of, and as well, provide an unpleasant odor in the products formulated therewith. The Examiner states that the applied reference to Saiga "also targets amines in order to neutralize odor produced by natural fat and oils using the same compound as that of claims 1 and 4". The Examiner has incorrectly interpreted the applied reference. In the applied reference to Saiga, the aliphatic amines are not the source of an unpleasant odor but are the material to be purified. Thus, in the present claims, a pigment derived from fish scales is being purified whereas in the applied reference, long chain aliphatic amines derived from a natural fat or oil are being purified. As stated at page 3, last paragraph of the translation of Saiga, it is stated that "Oxidizable impurities, such as aldehydes and ketones, are contained in aliphatic amines using natural fats and oils as raw materials. They are odor

sources or coloring precursors". As stated at page 4, lines 4-5 of the translation, "the oxidizable impurities contained in the aliphatic amines must be removed". At page 7, last paragraph of the translation of Saiga, it is stated "large amounts of oxidizable impurities, such as aldehydes and ketones, are contained in the aliphatic amines using natural fats and oils". The reference goes on to state that esters are produced by a reaction between the impurities and the borohydride alkali metal salt. Accordingly, the applied reference is not targeting amines, but is purifying amines. The pigment derived from fish scale is not a long-chain aliphatic amine but is guanine, claim 2, which is a nucleotide, not an aliphatic amine. Moreover, although not claimed, the present invention seeks to neutralize the amines which are impurities in the pigment. In Saiga, the long-chain amines are purified by removing carbonyl compounds by reaction with the complex metal hydride. The Examiner concludes that Saiga uses the same compound (borohydride) as the claimed invention to react with the same target (amine). This statement is not correct as the target of the claimed invention are amine impurities, whereas the target in the applied reference are carbonyl impurities. As such, the applied reference to Saiga does not anticipate instant claims 1, 2, and 4.

Claims 1-8, 10, and 14-17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Saiga in view of JP 2003/088337A ("Hiroshi").

First, the primary reference is not at all concerned with deodorizing a pigment derived from fish scales, as discussed above. Again, the primary reference to Saiga is concerned with chemically reducing carbonyl compounds that are odor sources in long chain aliphatic amines and their derivatives obtained from natural fats and oils with borohydride compounds. The patent does not remotely suggest treating a pigment, a solid, derived from fish scales with the complex metal hydride to reduce the odor of amine impurities.

The secondary reference does not make up for the deficiencies of the primary reference. The secondary reference is an attempt to form a liquid derived from fish scales and to deodorize the liquid. At page 4 of a translation

of Hiroshi, it states “fish scales dissolve in acidic water and also that this fish scale solution has a considerably reducible fish odor”. The process of Hiroshi is unlike the process of Saiga which purifies long-chain amines. Accordingly, the applied references are not properly combinable.

Moreover, the process of Hiroshi is unlike the process of the present invention which treats the pearlescent crystals taken from the fish scales, and is not directed to forming a fish scale liquid. In the presently claimed invention, a weak acid is added to the mixture of pigment and complex metal hydride to cause foaming and off-gassing from the mixture. As stated at page 9 of the application, the addition of a weak acid neutralizes the finished product and the liquid waste water providing improved odor reduction. Further, it has been found that the off-gassing which is achieved during the addition of the weak acid, appears to be needed to provide successful odor reduction. The combination of references does not suggest the benefit of adding both complex metal hydride and a weak acid to a paste of fish scale-derived pigment.

The Examiner submits that Applicants provide no evidence in the disclosure that off-gassing results in odor reduction.

Quite the contrary to the Examiner’s statement, the application clearly sets forth the advantages for adding the weak acid, in particular, acetic acid to produce foaming and off-gassing. As stated at page 9, lines 16-19 of the application, “delaying the acid neutralization prevents or reduces the significant off-gassing, which appears to be needed to provide successful odor reduction”. The next statement states that “if the mixture is allowed to sit too long, the addition of the acid does not result in the desired off-gassing or foaming action which is needed”. At page 10, lines 8-14 of the application, a theory is suggested “that the odor contamination in the pearlescent pigment material derived from fish is influenced by amine compounds, and that the borohydride-acid system which is used to treat the pearlescent pigment paste is thought to affect the odor diminution through a first reduction of odoriferous compounds including lower amines, such as dimethylamine and a second



weak Lewis acid-based reaction to release the reduced compounds". Thus, the specification clearly points to the need for both a sodium borohydride addition and acetic acid addition. Inasmuch as the primary reference to Saiga is not at all directed to treating the same material as that claimed, and since Hiroshi is not concerned with treating the same material as Saiga, and does not remotely suggest the enhanced odor reduction using both borohydride and acetic acid, the combination of Saiga with Hiroshi cannot be said to render the claimed process obvious and unpatentable.

The Examiner admits that the secondary reference does not even teach acetic acid. More importantly, the secondary reference teaches an addition of acid to the aqueous mixture of fish scales to dissolve the fish scales. The patent does not otherwise suggest extracting any crystalline pigment from the dissolved fish scales. The Examiner states that although Hiroshi does not teach the acetic acid of instant claims 8 and 17, the citric acid and phosphoric acid disclosed by Hiroshi are deemed to be functional equivalents of acetic acid. On the contrary, phosphoric acid is a very strong mineral acid and is used in Hiroshi to dissolve the fish scales. In the present invention, a weak acid is used to add to the mixture of crystals derived from fish scales, water and borohydride to cause off-gassing and improve odor reduction. The use of an acid to dissolve fish scales in the secondary reference is not all applicable to the presently claimed process.

The combination of references is improper as the applied references are directed to non-analogous art. The primary reference is directed to purifying long-chain aliphatic amines and the secondary reference to forming a fish scale liquid. Moreover, the combination of references does not remotely suggest the treatment of a pigment derived from fish scales with a complex metal hydride and weak acid as claimed. The primary reference is concerned with purifying amines derived from natural fats and oils, and the secondary reference is concerned with dissolving fish scales to form a fish scale solution in water and does not remotely suggest using the crystalline material from the fish scales as a pigment or the deodorization of such crystalline material. The secondary reference while concerned with deodorizing the dissolved liquid

derived from fish scales does not suggest use of a borohydride but instead, utilizes a cyclodextrin to aid in the deodorization process. In view of the fact that both the primary and secondary references are directed to deodorizing a liquid and not to deodorizing a pigment derived from fish scales, the combination of references cannot remotely suggest or render obvious the claimed invention.

Claims 1, 9, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saiga in view of Hiroshi.

As stated above, the combination of the primary and secondary references do not remotely suggest the claimed process. The primary reference is concerned with chemically purifying long-chain aliphatic amines obtained from natural fats and oils not treating pigment derived from fish scales. The secondary reference is not concerned with treating a pigment derived from fish scales but is concerned with dissolving the fish scales and using the dissolved liquid for a food product. The reference does not remotely suggest that the crystals obtained from the fish scales would have use nor does the reference remotely suggest any process which would reduce the odor and maintain the pearlescence of the crystalline material derived from the fish scales. Accordingly, since neither of the applied references singularly or combined are remotely concerned with treating a pigment derived from fish scales with complex metal hydride, how could the references remotely suggest any of the specific ranges which are disclosed. Importantly, the secondary reference is concerned with dissolving the fish scales to form a liquid whereas in the presently claimed invention, the crystalline material is extracted from the fish scales which become the pigment to be treated in the claimed invention. The fact that Applicants have shown that the pigment derived from fish scales can be deodorized is not at all suggested in any of the applied art.

The Examiner states that the extraction of crystalline pigment from fish scales is not recited in the rejected claims. The Examiner further states that although the claims are interpreted in light of the specification, limitations from

the specification are not read into the claims. First, Appellants argue that neither of the applied references are concerned with treating a pigment of any kind. Saiga is concerned with purifying long-chain aliphatic amines derived from fats and oils, and the secondary reference to Hiroshi is concerned with liquefying or dissolving the fish scales for use in a food product. Further, the claimed process of deodorizing "pigment derived from fish scales" as the Examiner says must be interpreted in light of the specification. The specification clearly indicates what is meant by the pigment derived from fish scales and is set forth in the "Background of the Invention" at pages 1 and 2 of the specification and under the "Detailed Description of the Invention" at lines 15-20. Thus, the claimed method of treating pigment "derived from fish scales" clearly is understood to mean guanine crystals extracted from the fish scales, as set forth throughout the specification. Neither of the references again are concerned with treating pigment and certainly not treating guanine crystals extracted from fish scales.

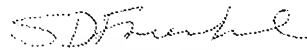
Claims 1 and 18-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Saiga in view of Hiroshi in further view of U.S. Patent No. 4,486,334 ("Horiuchi").

Appellants readily admit that cosmetics have been derived from pigments obtained from fish scales prior to the present invention. The problem with such cosmetics is that such cosmetics were provided with an unpleasant odor. The present invention is directed to treating the pigment derived from fish scales to reduce the odor. The combination of Saiga and Hiroshi as discussed above does not remotely suggest treating pigment derived from fish scales with a complex borohydride. While the primary reference teaches chemically treating long-chain aliphatic amines with borohydride compounds, the reference does not remotely suggest treating a pigment, a solid, with such materials, let alone a pigment derived from fish scales. The secondary reference is not concerned with deodorizing the crystalline material (pigment) obtained from fish scales but is concerned with dissolving the fish scales to form a deodorized liquid. The liquid of the secondary reference is used for a

food product. Accordingly, the addition of the Horiuchi reference is simply incongruous with the teachings of Saiga and Hiroshi.

In view of the above remarks, it is believed that claims 1-20 patentably distinguish over the art of record and that the Final Rejection of such claim is improper. Appellants respectfully solicit reversal of the Final Rejection and the allowance of claims 1-20.

Respectfully submitted,



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Date: September 12, 2008

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CLAIMS APPENDIX

The claims in this Appeal are:

1. A process for the deodorization of pigment derived from fish scales comprising contacting said pigment with a complex metal hydride.
2. The process of claim 1 wherein said pigment comprises guanine.
3. The process of claim 1 wherein said pigment is in the form of a paste comprising pigment and water when contacted with said complex metal hydride.
4. The process of claim 1 wherein said complex metal hydride is sodium borohydride.
5. The process of claim 1 comprising mixing said complex metal hydride and said pigment to form a mixture and subsequently adding a weak acid to cause foaming of off-gassing from said mixture.
6. The method of claim 5 wherein said complex metal hydride is sodium borohydride.
7. The process of claim 6 wherein said weak acid is an organic acid.
8. The process of claim 7 wherein said organic acid is acetic acid.
9. The process of claim 6 wherein said pigment is in the form of a paste comprising pigment and water, mixing said paste with sodium borohydride to form a mixture, said sodium borohydride being added to said mixture in amounts ranging from 0.5-10 wt% of said pigment paste.
10. The process of claim 9 wherein said sodium borohydride is added as a solid powder.

11. The process of claim 10 wherein said sodium borohydride powder is added in amounts of 1 wt% relative to said pigment paste.
12. The process of claim 9 wherein said weak acid is added in amounts of from about 0.5 to 10 wt% of said pigment paste.
13. The process of claim 12 wherein said weak acid is added in amounts of about 1 wt% relative to said pigment paste.
14. The process of claim 9 wherein said weak acid is added to said mixture of pigment paste and sodium borohydride no more than three hours after said mixture is formed.
15. The process of claim 14 wherein said weak acid is added to said mixture of pigment paste and sodium borohydride less than one hour after said mixture is formed.
16. The process of claim 9 wherein said weak acid is an organic acid.
17. The process of claim 16 wherein said organic acid is acetic acid.
18. A cosmetic formulation containing the pigment treated in accordance with the process of claim 1.
19. A cosmetic formulation containing the pigment treated in accordance with the process of claim 5.
20. A cosmetic formulation containing the pigment treated in accordance with the process of claim 10.

EVIDENCE APPENDIX

Translations of Saiga (A) and Hiroshi (B).

RELATED PROCEEDINGS APPENDIX

U.S. Serial No. 10/908,503, filed May 14, 2005, Appeal No. 2008-2392.